M/053/005

State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

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May 14, 1998

Doug D. Jensen, Environmental Coordinator
USMX of Utah, Inc.
P.O. Box 2650
St. George, Utah 84770

RE: Goldstrike Mine April 8, 1998 Draft Closure Plan

Dear Mr. Jensen:

The following are our review comments of the above referenced draft closure plan submitted by your consultant, JBR Environmental, Inc. to our office on April 9, 1998. This also takes into consideration the results of our subsequent meeting with you and representatives of the Division of Oil, Gas and Mining (DOGM) on April 29, 1998. As we pointed out in this meeting there appeared to be five main categories of issues which encompass the scope of closure of the facilities which need to be addressed by a fully acceptable closure plan. These are:

1. Heap Leach Pad Reclamation

Due to the tentative nature of the mining company, all parties concurred that this aspect of the mine closure is the highest priority of all the activities needed to be done at the site. In order to reduce to a minimum the amount of wastewater being generated at the site and restore the area to the most achievable environmentally stable setting, it is extremely desirous to accomplish this aspect within the upcoming construction season. We felt it would be feasible to undertake this activity before the remainder of other issues are fully addressed in a final closure plan. Previous work demonstrates that the use of vegetative soil cover to be the best alternative. The evaluation on the remainder of work at the site was not critically dependent on this aspect. In terms of this agency's requirements and the groundwater discharge permit, we felt it could be done as a non-substantive modification to an existing facility provided it met with approval of the DOGM mining reclamation plan. However there still remain several open items which require your further input:

a. The question was raised on the acceptability of pushing the spent heap ore off the existing liner when recontouring the pad. We agreed that the footprint of subore outside the existing liner would be minimal compared to the total area of pad No. 2.

b. The cover design was not sufficiently detailed to determine if an adequate vegetative growth would be established and maintained to optimize moisture reduction. The concern is if there would be sufficient topsoil for this purpose or if there would be localized subsoil salinity impacts that would hamper the establishment of long term vegetative cover.

c. There was a question if the previous HELP modeling was representative of the actual cover that was going to be placed including layer permeability and thicknesses. Specifically, was the modeled topsoil layer 8 or 12 inches and what compaction effort was assumed in selecting a subsoil permeability? You agreed to provide an input file so that we could perform sensitivity HELP modeling based on the current proposal. Please submit that file as soon as possible.

2. Interim Water Budget Management Plan

No information has been submitted in this regard for us to understand how the facilities will be phased out and how the larger interim volumes of water will be managed in compliance with the ground water discharge permit. The need remains to establish a feasible process based on projected average flows of help modeling and anticipated peak flows during estimated precipitation events.

a. Without the sufficient detail to develop ground water discharge permit conditions, the permit is being reissued with the previous performance standards. These will be modified as acceptable conditions are established.

b. The closure plan submitted thus far only described a proposed long term process using a drainfield for management of heap draindown and long term leachate from precipitation break through.

c. There has been extensive discussion on the possible development of an interim land application scenario but no information has ever been submitted for our consideration.

3. Heap Leachate Drainfield Design

a. No details on the design have been submitted. Our meeting discussion focused on a desire to address the nitrate concentrations in the current and projected draindown water. There should be an attempt if possible to deal with the nitrate through vegetation uptake in some type of evapo-transpiration process design.

b. The hydraulic design of the drainfield should be consistent with the projected peak flows anticipated to be encountered and information submitted to justify the design. There was also some question that the HELP modeling that was done to justify its location in the Hamberg Pit was representative of the conditions which would be experienced. Because of the large volume of past historical individual discharges to this area, the water retention ability of the fill material may not exist in any significant amount. Therefore the HELP modeling would be inaccurate. There was also some discussion on evaluating other locations to get a more effective treatment and removal efficiency of contaminants.

c. This type of industrial drainfield is regulated by the Federal Underground Injection Control (UIC) program and, in addition to a design adequacy assessment done in conjunction with the issue in above paragraph a, the inventory forms for a Class V UIC well will need to be completed in order to enter them into the Federal database.

4. Long Term Monitoring and Facility Oversight

Because the facility is anticipated to generate a quality of wastewater for a indeterminate period of time in a quantity and concentration exceeding groundwater quality standards, there will need to be a period of post closure monitoring. The current draft permit contains the recommended monitoring points and frequency for the next five years. This may be changed depending on the closure technology design and its implementation schedule.

5. Nitrate Issue

The information submitted in the closure plan is inconclusive on establishing a long term understanding of the potential impacts of this contaminant. The previous attenuation studies don't quantify the impact of nitrate in relation to the proposed closure technology. For this issue to be resolved some basis for achievement of acceptable levels must be established. At a minimum some demonstration must be made establishing the quantity of nitrate going to the drainfield diminishes with time and that the total quantity is low enough not to pose an unacceptable risk. This demonstration could come in the form of some type of site specific contaminant fate calculations showing what the extent of any contaminant releases will be and an evaluation made to determine whether existing monitoring wells are placed such that potential impacts may be measured. In addition to the long term impacts of the drainfield releases, there currently is being experienced concentrations of nitrates in monitoring well Nos. MW-2 and MW-7. These are showing an increasing trend. While it is assumed these are the degradation products of cyanide from previous spills, the total impact of this issue is still in question.

In addition to the above five main issues and the associated questions they create, several other items came up during the above referenced meeting. In a final closure plan, these would need to be addressed. These included the plugging of former compliance monitoring wells located on site to preclude the potential for introduction of surface contaminates and the removal of existing pond liners.

The above comments are provided as a summary of our discussions and itemization of points that will need your reconsideration in the resubmission of a complete closure plan. Should you have any questions concerning the above please contact this office.

Sincerely,

Utah Water Quality Board

Don A. Ostler, P.E.
Executive Secretary

DAO:ljm/fb

cc: Division of Oil, Gas and Mining
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